REMARKS

Claims 1-32 are pending in the present patent application. Claims 18-29 are allowed. Claims 1, 7, 11, 13-17, and 30-32 stand rejected; claim 12 stands objected to; and claims 2-6 and 8-10 have been withdrawn from consideration. This application continues to include claims 1-32.

Applicants thank the Examiner for allowing claims 18-29.

The Examiner has objected to claim 12 as being dependent upon a rejected base claim, but has indicated that claim 12 contains allowable subject matter, and would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants thank the Examiner for the indication of allowability regarding claim 12.

However, Applicants respectfully believe that claim 12 is allowable in its present form, and in view of Applicants' response to claims 7 and 11, set forth below, Applicants respectfully request the Examiner to withdraw the objection to claim 12.

Applicants thank the Examiner for considering Applicants' previous arguments and for the Examiner's Response to Arguments, which is addressed by Applicants' below.

Claim 30 was rejected under 35 U.S.C. §102(b) as being anticipated by Umezawa, et al., U.S. Patent No. 6,276,776 B1 (hereinafter, Umezawa). Applicants respectfully request reconsideration of the rejection of claim 30 in view of the following.

Umezawa is directed to controlling the temperature of a plurality of recording heads in order to maintain recording temperature in a low-temperature environment (col. 1, lines 11-14). Umezawa discloses an ink jet printer 200 having four (4) recording heads 9A-9D (col. 5, lines 16-30, Figs. 1 and 2). 9A1 to 9D1 denote sub-heaters for heating the respective recording heads 9A

to 9D, and 10A to 10D are temperature sensors for detecting temperatures of the respective recording heads 9A to 9D (col. 5, lines 53-56, Fig. 1).

The temperature of each of the recording heads 9A to 9D is controlled using four (4) pulse-width modulated (PWM) periods, one for each recording head, based on the temperature detected by temperature sensors 10A to 10D, and the pulses are repeatedly provided until the recording heads reach the desired temperature (col. 6, lines 33-57, Fig. 3). The recording operation is then started after reaching the optimum recording temperature (col. 7, lines 9-12).

Applicants believe that claim 30 patentably defines Applicants' invention over Umezawa, for at least the reasons set forth below.

Claim 30 is directed to a method for providing a plurality of fire pulses in an ink jet printer, comprising the step of producing a plurality of fire signals specific to a particular color, each fire signal of said plurality of fire signals being asserted at a different timing than other of said plurality of fire signals and wherein each fire signal of the plurality of fire signals is used to separately address a respective corresponding group of nozzles on a printhead.

In contrast to claim 30, Umezawa discloses that the temperature of each of the recording heads 9A to 9D is controlled using four (4) pulse-width modulated (PWM) periods, one for each recording head, based on the temperature detected by temperature sensors 10A to 10D for the respective recording heads 9A to 9D, and the pulses are repeatedly provided until the recording heads reach the desired temperature (col. 5, lines 53-56, col. 6, lines 33-48, Fig. 3).

In the Response to Arguments, it is asserted that Umezawa discloses in Fig. 3 four fire pulses, each separately addressing a group of nozzles on the print head, wherein the print head comprises four nozzle groups: First head, second head, third head and fourth head.

However, as acknowledged by the Examiner, the Umezawa pulses are for four (4) different heads, one for each head, in contrast to claim 1, wherein the nozzle groups are within a single printhead. Umezawa simply does not disclose, teach, or suggest asserting each fire signal of a plurality of fire signals at a different timing, wherein each fire signal of the plurality of fire signals is used to separately address a respective corresponding group of nozzles on a printhead.

Here, the term, "printhead," as that term is used within the context of Applicants' specification and claims, pertains to a single printhead, not four print heads, as disclosed by Umezawa. For example, Applicants' specification describes a single color printhead 42 having a plurality of nozzles 86 that can be separated into individually addressable groups associated with cyan, magenta and yellow inks (see Applicants' specification at page 6, lines 23-31; and from page 7, line 27 to page 8, line 2).

"The Patent and Trademark Office ("PTO") determines the scope of claims in patent applications not solely on the basis of the claim language, but upon giving claims their broadest reasonable construction 'in light of the specification as it would be interpreted by one of ordinary skill in the art.'" *Phillips v. AWH Corp.*, 75 USPQ2d 1321, 1329 (Fed. Cir. 2005), quoting *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364, 70 USPQ2d 1827 (Fed. Cir. 2004) (MPEP2111) (Emphasis added).

Applicants respectfully submit that upon giving claim 30 its broadest reasonable construction "in light of the specification as it would be interpreted by one of ordinary skill in the art," the claim 30 limitation pertaining to each fire signal of said plurality of fire signals being asserted at a different timing than other of said plurality of fire signals and wherein each fire signal of the plurality of fire signals is used to separately address a respective corresponding group

of nozzles on a printhead, would not be interpreted to include Umezawa's pulses to four separate print heads.

In addition, as set forth in MPEP 2131, "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) (Emphasis added). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co*., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989)(Emphasis added). The elements must be arranged as required by the claim, but this is not an *ipsissimis verbis* test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990) (Emphasis added).

Applicants respectfully submit that since the claim limitation "each fire signal of said plurality of fire signals being asserted at a different timing than other of said plurality of fire signals and wherein each fire signal of the plurality of fire signals is used to separately address a respective corresponding group of nozzles on a printhead," in light of the specification as it would be interpreted by one of ordinary skill in the art, is not expressly or inherently in the Umezawa reference, since the identical invention is not shown in Umezawa in as complete detail as is contained in the claim, and since the elements in Umezawa are not arranged as required by the claim, claim 1 is not anticipated by Umezawa.

Applicants thus respectfully request that the rejection of claim 30 under 35 U.S.C. §102(b) be withdrawn.

Claims 1, 7, 11, 13-17, and 30-32 were rejected under 35 U.S.C. §103(a) as being unpatentable over the third embodiment associated with Figs. 7-8 of Kao, et al., U.S. Patent Application Publication No. 2002/0018086 A1 (hereinafter, Kao) in view of the fourth

embodiment associated with Figs. 9-10 of Kao. Applicants respectfully request reconsideration of the rejection of claims 1, 7, 11-17, and 30-32 in view of the following.

Kao is directed to a driving circuit of an ink jet print head (page 1, paragraph 2). Kao discloses a first heating pulse 435, which is a preheating pulse that preheats all ink jet cells regardless of whether they will eject ink or not. The first heating pulse 435 is less than the threshold at which ink is ejected. The ink jet cells that are intended to eject ink receive a second heating pulse 438, and the total received energy exceeds the threshold, so that the nozzles eject ink (page 4, paragraph 34, Fig. 10).

Applicants believe that claims 1, 7, 11-17, and 30-32 patentably define Applicants' invention over Kao, for at least the reasons set forth below.

Claim 1 is directed to a method for providing a plurality of fire pulses in an ink jet printer, and recites producing a plurality of fire signals, each fire signal of said plurality of fire signals being asserted at a different timing than other of said plurality of fire signals and wherein each fire signal of the plurality of fire signals is used to separately address a respective corresponding group of nozzles; and combining said plurality of fire signals to form a composite fire signal that maintains said different timing.

The Examiner acknowledges that the Kao third embodiment does not disclose, teach, or suggest each fire signal of said plurality of fire signals being asserted at a different timing than other of said plurality of fire signals and combining said plurality of fire signals to form a composite fire signal that maintains said different timing, as recited in claim 1, but asserts that the Kao fourth embodiment does so, and that it would be obvious to combine the Kao third and fourth embodiments in order to achieve Applicants' claimed invention.

However, the Examiner has not shown that such a combination would operatively yield the invention of claim 1. Indeed, Applicants respectfully submit that the asserted combination would not yield the invention of claim 1.

For example, the Kao fourth embodiment specifies that the first heating pulse is applied to all ink jet cells regardless of whether they will eject ink or not, and the second pulse is applied to only to those cells intended to eject ink (paragraph 0034, Fig. 10).

However, the Kao third embodiment's first pulse is supplied only to those cells intended to eject ink, whereas the second pulse is applied only to cells not intended to eject ink (paragraph 0032, Fig. 8).

Thus, if the third embodiment's first pulse were combined with the fourth embodiment's second pulse, the clear result would be that all ink jet cells will eject ink whether or not those cells were intended to eject ink, which is clearly an unacceptable result.

Similarly, if the third embodiment's second pulse were combined with the fourth embodiment's first pulse, the clear result would be that none of the ink jet cells will eject ink, regardless of whether those cells were intended to eject ink, which is also clearly an unacceptable result.

MPEP 2142 and MPEP 2143 provide that to establish a prima facie case of obviousness, there must be a reasonable expectation of success. However, a combination that results in all ink jet cells ejecting ink or all ink jet cells not ejecting ink, regardless of whether those cells were intended to eject ink, is not a successful outcome of the combination, and hence, Applicants respectfully submit that a prima facie case of obviousness has not been established as against claim 1.

In addition, MPEP 2143.01 provides that if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

Applicants respectfully submit that a combination that results in all ink jet cells ejecting ink or all ink jet cells not ejecting ink, regardless of whether those cells were intended to eject ink, clearly renders the Kao apparatus as unsatisfactory for its intended purpose, and hence, there is no suggestion or motivation to make the proposed modification.

Further, the operation of the fourth embodiment is plainly configured to provide one pulse to all cells, and a second pulse only to those cells intended to eject ink, whereas the third embodiment is plainly configured to provide one pulse only to those cells intended to eject ink and a second pulse to only those cells not intended to eject ink.

The two approaches are simply not combinable, but rather, are two different approaches to solving a particular problem. Nor has the Examiner shown how such a combination would function or whether such a combination would even be operational. Rather, the Examiner asserts only in general fashion that the embodiments may be combined.

In addition, the expectation of some advantage is the strongest rationale for combining references (MPEP 2144). However, there is no advantage that would flow from combining the third and fourth Kao embodiments, nor has such an advantage been specifically asserted.

Accordingly, Kao, including the third and fourth embodiments, taken alone or in combination, does not disclose, teach, or suggest the subject matter of claim 1. Claim 1 is thus believed allowable in its present form.

Claim 7 is directed to an ink jet printer, and recites, in part, a controller communicatively coupled to said printhead carrier for producing a plurality of fire signals, each fire signal of said plurality of fire signals being asserted at a different timing than other of said plurality of fire signals, said controller combining said plurality of fire signals to form a composite fire signal that maintains said different timing, and wherein each fire signal of said plurality of fire signals is used to separately address a respective corresponding group of nozzles.

Claim 7 is believed allowable in its present form for substantially the same reasons as set forth above with respect to claim 1.

Claims 11 and 13-17 are believed allowable due to their dependence on otherwise allowable base claim 7. In addition, claims 11 and 13-17 further and patentably define the invention over Kao.

Claim 30 is directed to a method for providing a plurality of fire pulses in an ink jet printer, comprising the step of producing a plurality of fire signals specific to a particular color, each fire signal of said plurality of fire signals being asserted at a different timing than other of said plurality of fire signals and wherein each fire signal of the plurality of fire signals is used to separately address a respective corresponding group of nozzles on a printhead.

Claim 30 is believed allowable in it present form for substantially the same reasons as set forth above with respect to claim 1.

In addition, Kao does not disclose, teach, or suggest producing a plurality of fire signals specific to a particular color, as recited in claim 30. Although it is asserted that "specific to a particular color" is broadly interpreted as a color of a particular ink in Kao's printing apparatus, Applicants respectfully submit that "The Patent and Trademark Office ("PTO") determines the scope of claims in patent applications not solely on the basis of the claim language, but upon giving claims their broadest reasonable construction 'in light of the specification as it would be interpreted by one of ordinary skill in the art.'" *Phillips v. AWH Corp.*, 75 USPQ2d 1321, 1329 (Fed. Cir. 2005), quoting *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364, 70 USPQ2d 1827 (Fed. Cir. 2004) (MPEP2111) (Emphasis added).

Applicants respectfully submit that Applicants' specification clearly employs the phrase "specific to a particular color" in reference to a printhead configured to print with more than one color during a printing operation. The term, "particular color," pertains to a particular color from a group of more than one color, i.e., as used in color printing, which is known in the art to mean printing with more than one color, not monochrome printing, as disclosed by Kao, which is known in the art to mean printing with a single color.

Upon giving claim 30 its broadest reasonable construction "in light of the specification as it would be interpreted by one of ordinary skill in the art," one skilled in the art would not interpret the claim 30 limitation, "specific to a particular color," as recited in claim 30, to pertain to the monochrome device disclosed by Kao.

Accordingly, Kao does not disclose, teach, or suggest producing a plurality of fire signals specific to a particular color, as recited in claim 30.

Claim 30 is thus believed allowable in its present form.

Claims 31 and 32 are believed allowable due to their dependence on otherwise allowable base claim 30. In addition, claims 31 and 32 further and patentably define the invention over Kao.

Accordingly, for at least the reasons set forth above, Applicants believe that claims 1, 7, 11, 13-17 and 30-32 are in condition for allowance in their present respective forms, and thus respectfully request that the rejection of claims 1, 7, 11, 13-17 and 30-32 under 35 U.S.C. 103(a) be withdrawn.

For the foregoing reasons, Applicants submit that no combination of the cited references teaches, discloses or suggests the subject matter of the amended claims. The pending claims are therefore in condition for allowance, and Applicants respectfully request withdrawal of all rejections and allowance of the claims.

In the event Applicants have overlooked the need for an extension of time, an additional extension of time, payment of fee, or additional payment of fee, Applicants hereby conditionally petition therefor and authorize that any charges be made to Deposit Account No. 20-0095, TAYLOR & AUST, P.C.

Should any question concerning any of the foregoing arise, the Examiner is invited to telephone the undersigned at (317) 894-0801.

Respectfully submitted,

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